

REMARKS

Claims 1-21 are currently pending in this application. Applicant has added claim 22. Reconsideration is respectfully requested in light of the above amendments and the following remarks.

The Examiner rejected claims 1-7, 10-12 and 14-20 under 35 U.S.C §103(a) as being obvious in light of U.S. Patent 6,738,669 to Sloman et al. in view of U.S. Patent 5,662,669 to Budd et al. Applicant respectfully traverses this rejection.

Applicants' claimed invention as recited in independent claims 1 and 15 is directed towards a method and corresponding apparatus for determining a parameter related to cardiac geometry. For example independent claim 1 recites a method comprised in part by delivering an electrical signal to a first position in or adjacent to a first cardiac chamber... sensing a potential generated by the delivered electrical signal at a second position in or adjacent to a second cardiac chamber and determining a parameter related to cardiac geometry based, at least in part, on the sensing. (Underlining added for emphasis only). Applicants respectfully submit that the cited references, alone or in combination, do not disclose or suggest the recited claim elements.

The Examiner admits that Sloman et al. do not disclose determining a parameter related to cardiac geometry based at least in part on sensed signals as recited in the claimed invention. The Examiner alleges however that Budd et al. disclose an electrophysiology mapping system capable of mapping a full three dimensional geometry of a heart chamber. The Examiner further alleges that it would have been obvious to one of ordinary skill in the art to modify the invention of Sloman et al. to include the use of the catheter disclosed by Budd et al. to generate a visual map of the heart's anatomy.

It is well understood that there must be some suggestion in the references that they be combined to support an obviousness rejection. Merely picking and choosing among various references is not permitted, and doing so amounts to no more than mere hindsight reconstruction. One of ordinary skill in the art must be motivated by the teachings to combine the references, without using applicants' claimed invention as a

guide. Further, the strongest rationale for combining references is a recognition, either expressly or impliedly, in the prior art, that some advantage or expected beneficial result would be produced by the proposed combination of references. In re Sernaker, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983).

The Examiner suggests that the motivation to combine Sloman et al. and Budd et al. is to provide a visual map of the heart's anatomy as well as the electrical activity in order to better assess the need for therapy, such as ablation techniques. Applicants respectfully disagree. There is no suggestion in Sloman et al. or Budd et al. that combining the mapping system taught by Budd et al. with the far-field analysis provided by Sloman et al. would provide beneficial therapeutic and diagnostic capabilities.

Rather, Sloman et al. disclose a system and method for automatically detecting capture of a ventricular chamber in a multi-chamber cardiac stimulation device. Ventricular capture is detected by sensing the far-field R-wave that follows a ventricular stimulation pulse that has successfully captured the ventricle. Thus, Sloman et al. simply very capture of a first chamber in response to a stimulation pulse by measuring a far-field response of that pulse. Sloman et al. do not however disclose or in any way suggest determining a parameter related to cardiac geometry based at least in part on potentials sensed at a second position in response to electrical signals delivered to a first position as recited Applicants' claimed invention. (Sloman et al., col. 4, line 65 – col. 5, line 2). Further, Sloman et al. in no way disclose or suggest that the detection of ventricular capture would in any way be enhanced by knowledge of the cardiac geometry.

Similarly, Budd et al. disclose an electrophysiology mapping system that introduces a modulated electric field into a heart chamber. The blood volume and the moving heart wall surface modify the applied electric field. Electrode sites within the heart chamber passively monitor the modifications to the field and a dynamic representation of the location of the interior wall of the heart is developed for display to the physician. (Budd et al., col. 1, lines 60-67). Thus, Budd et al. monitor the field induced in a heart chamber by stimulation signals in that same chamber. Budd et al. do not however disclose or suggest determining a parameter related to cardiac geometry based at least in part on potentials sensed at a second position in or adjacent to a

second cardiac chamber in response to electrical signals delivered to a first position in or adjacent to a first cardiac chamber as recited Applicants' claimed invention.

Further Budd et al. do not disclose or in any way suggest that the mapping disclosed therein would be improved by measuring signals in a second heart chamber in response to signals generated in a first chamber. In addition, the subject matter of Budd et al. is completely different from the subject matter disclosed in Sloman et al. Thus, there is no motivation to modify the invention of Sloman et al. to include the use of the catheter disclosed by Budd et al. to generate a visual map of the heart's anatomy.

Accordingly, Applicants respectfully submit that claims 1, 15 and 19 of the present application are novel and unobvious over Sloman et al. and Budd et al. and are therefore allowable. Applicants further submit that claims 4-7, 10-12 and 14, claims 16-18 and claim 20 that depend from claims 1, 15 and 19 respectively are allowable as are claims 1, 15 and 19 and for additional limitations recited therein.

The Examiner rejected claim 13 under 35 U.S.C §103(a) as being unpatentable over Sloman et al. in view of Budd et al. and further in view of U.S. Patent No. 6,438,408 to Mulligan et al. Applicants respectfully traverse this rejection.

In view of the foregoing analysis of independent claim 1 over Sloman et al. in view of Budd et al., Applicants believe that the rejections of dependent claim 13 under §103 is rendered moot as claim 13 depends from allowable independent claim 1. Applicant, therefore, requests withdrawal of the rejection of claim 13 under 35 U.S.C. § 103(a).

Further, newly added independent claim 22 recites similar limitations. For example, independent claim 22 recites a method comprised in part by delivering an electrical signal to a first position in or adjacent to a cardiac chamber using a unipolar electrode configuration and sensing a potential generated by the delivered electrical signal at a second position. (Underlining added for emphasis only). Applicants respectfully submit that neither Sloman et al. nor Budd et al. disclose or suggest the recited claim elements.

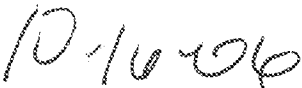
Rather, as argued above with respect to claims 1, 15 and 19, Sloman et al. simply verify capture of a first chamber in response to a stimulation pulse by measuring a far-field response of that pulse. Further, Dahl et al. determine geometric changes in a

heart chamber based upon signals generated in that heart chamber by a plurality of active electrode. However, Budd et al. do not disclose or suggest delivering an stimulation signal using a unipolar electrode configuration.


Further as argued above Budd et al. do not disclose or in any way suggest that the mapping disclosed therein would be improved by measuring signals in a second heart chamber in response to signals generated in a first chamber and the subject matter of Budd et al. is completely different from the subject matter disclosed in Sloman et al. Thus, there is no motivation to modify the invention of Sloman et al. to include the use of the catheter disclosed by Budd et al. to generate a visual map of the heart's anatomy. Accordingly, Applicants respectfully submit that claim 22 is novel and non-obvious over Sloman et al. and Budd et al. and is allowable.

In light of the above claim amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,



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